IN THE CLAIMS:

Claims 45, 46, 48, 49, 51-68, 70-73, 75-77, and 79-90 are amended herein. Claims 27, 47, 50-52, 69, and 78 are cancelled. Claims 91 through 163 are added. All pending claims and their present status are produced below.

1   27.   (Cancelled).

1   45.   (Currently amended) The method of claim 27 91, wherein the first image data signal

2   is stored in a first portion of a memory unit and the second image data signal is stored

3   in a second portion of the memory unit.

1   46.   (Currently amended) The method of claim 27 91, wherein the first image data signal

2   is stored in a first portion of a memory unit at a start of operation of the optical

3   detection system and the second image data signal is stored in a second portion of a

4   memory unit for each set of measurement measurements of the similarity of images.

1   47.   (Cancelled).

1   48.   (Currently amended) The method of claim 27 91, wherein the second image data

2   signal is [[a]] substantially a shifted version of the first image data signal.

1   49.   (Currently amended) The method of claim 27 91, wherein the first image data signal

2   comprises a first speckle image data signal and the second image data signal

3   comprises a second speckle image data signal.

1   50.   (Cancelled).

1   51.   (Cancelled).

1   52.   (Cancelled).

1   53.   (Currently amended) The method of claim ~~27~~ 91, wherein the similarity of ~~one set to~~

2   ~~a plurality of~~ at least two image data signals <u>is based on each image data comprising a</u>

3   <u>set and</u> is measured at a multiple of a shift value, each set comprising a high

4   resolution and a low resolution image data signal, and the image data signal in ~~the~~ <u>a</u>

5   first set being shifted by a predetermined shift value prior to the measurement.

1   54.   (Currently amended) The method of claim ~~27~~ 91, wherein measuring the similarity is

2   performed through an application of a cross correlation function.

1   55.   (Currently amended) The method of claim ~~27~~ 91, wherein the displacement value

2   comprises identifying a shift to apply to the first image data signal that results in a

3   substantial similarity between the first image shifted by the displacement value and

4   the second image.

1   56.   (Currently amended) The method of claim ~~27~~ 91, wherein the first image data signal

2   is replaced by the second image data when a displacement value comprises a

3   predetermined value.

1   57.   (Currently amended) The method of claim ~~27~~ 91, wherein the at least one optical

2   element comprises a lens.

1   58.   (Currently amended) The method of claim ~~27~~ 91, wherein the at least one optical

2   element comprises a lens and an aperture.

1   59.   (Currently amended) The method of claim ~~27~~ 91, wherein the coherent light beam

2   from the coherent light source comprises a collimated beam.

1   60.   (Currently amended) The method of claim 59, wherein the collimated beam produces

2   the illumination spot on the surface.

1   61.   (Currently amended) The method of claim ~~27~~ 91, wherein the light source comprises

2   a laser diode.

1   62.   (Currently amended) The method of claim ~~27~~ 91, wherein the back-scattered light

2   from the surface, passes through the at least one optical element to generate an image

3   of the illumination spot on the pixels of the at least one photosensor array.

1   63.   (Currently amended) The method of claim 62, wherein the image is focused on the

2   photosensor array.

1   64.   (Currently amended) The method of claim ~~27~~ 91, wherein the back-scattered light

2   from the surface, passes through the at least one optical element to generate an image

3   of the illumination spot that is less than or equal to a size of the photosensor array.

1   65.   (Currently amended) The method of claim 49, wherein the speckle image associated

2   with at least one of the first speckle image data signal and the second speckle image

3   data signal comprises speckles of a dimension greater than or equal to a pixel

4   dimension.

1   66.   (Currently amended) The method of claim 54, wherein performing the cross

2   correlation function further comprises:

3   multiplying the first image data signal and the second image data signal and

4   summing results of each multiplication operation over each data point.

1   67.   (Currently amended) The method of claim 66, wherein the cross correlation of the

2   first image data signal to the second image data signal is measured at a multiplicity of

3   a shift value, the first image data signal being shifted by a predetermined shift value

4   before the cross correlation is measured.

1   68.   (Currently amended) The method of claim 67, wherein the displacement value

2   comprises identifying the shift to apply to the first image data signal that results in a

3   substantial cross correlation between the first image shifted by the displacement value

4   and the second image.

1   69.   (Cancelled).

1   70.   (Currently amended) The system of claim 69 163, wherein the first storage area

2   comprises a first portion of a memory unit and the second storage area comprises a

3   second portion of the memory unit.

1   71.   (Currently amended) The system of claim 69 163, wherein the first image data signal

2   comprises a first substantially random image data signal and the second image data

3   signal comprises a second substantially random image data signal.

1   72.   (Currently amended) The method of claim 69 163, wherein the second image data

2   signal is [[a]] substantially a shifted version of the first image data signal

1   73.   (Currently amended) The system of claim 69 163, wherein the first image data signal

2   comprises a first speckle image data signal and the second image data signal

3   comprises a second speckle image data signal.

1 74. (Previously presented) The system of claim 71, wherein the comparison module

2   comprises a cross correlation module.

1 75. (Currently amended) The system of claim 74, wherein the similarity of one set to a

2   plurality of at least two image data signals is measured at a multiple of a shift value,

3   each set comprising a high resolution and a low resolution image data signal, and the

4   image data signal in the first set being shifted by a predetermined shift value prior to

5   the measurement.

1 76. (Currently amended) The system of claim 74, wherein cross-correlation module

2   applies the cross-correlation function on two sets of two image data signals, each set

3   comprising a high resolution and a low resolution image data signals, and in each set,

4   each of the image data signals being shifted at least a portion of a pixel on a

5   photosensor array.

1 77. (Currently amended) The system of claim 69 163, wherein the first image data signal

2   comprises a first randomly patterned image data signal and the second image data

3   signal comprises a second randomly patterned image data signal.

1 78. (Cancelled).

1 79. (Currently amended) The system of claim 69 163, wherein the displacement value

2   comprises an argument of the cross-correlation function at function peaks.

1 80. (Currently amended) The system of claim 69 163, wherein the first image data signal

2   is replaced by the second image data when the displacement value comprises a

3   predetermined value.

1   81.   (Currently amended) The system of claim ~~69~~ 163, wherein the at least one optical

2   element comprises a lens.

1   82.   (Currently amended) The system of claim ~~69~~ 163, wherein the at least one optical

2   element comprises a lens and an aperture.

1   83.   (Currently amended) The system of claim ~~69~~ 163, wherein the coherent light beam

2   from the coherent light source comprises a collimated beam.

1   84.   (Currently amended) The system of claim 83, wherein the collimated beam produces

2   the illumination spot on the surface.

1   85.   (Currently amended) The system of claim ~~69~~ 163, wherein the coherent light source

2   comprises a laser diode.

1   86.   (Currently amended) The system of claim ~~69~~ 163, wherein the back-scattered light

2   from the surface, passes through the at least one optical element to generate an image

3   of the illumination spot that is less than or equal to a size of the photosensor array.

1   87.   (Currently amended) The system of claim 73, wherein the speckle image associated

2   with at least one of the first speckle image data signal and the second speckle image

3   data signal comprises speckles of a dimension greater than or equal to a dimension of

4   a pixel of the pixels.

1   88.   (Currently amended) The system of claims ~~69~~ 163, wherein the photosensor array

2   comprises a plurality of photodiode pixels.

1   89.   (Currently amended) The system of claim 74, wherein the cross-correlation module

2   is further configured to:

3   multiply the first image data signal and the second image data signal; and

4   sum results of each multiplication operation.

1   90.   (Currently amended) The system of claim 69 163, wherein an image data point

2   comprises a digital value representative of a pixel on the photosensor array.

1   91.   (New) In an optical detection system housing a coherent light source for illuminating

2   a surface, and an optical sensing assembly comprising at least one photosensitive

3   array and at least one optical element, a method for detecting movement comprising:

4   generating an illumination spot on the surface by lighting the surface with a coherent

5   light beam from the coherent light source, the illumination spot providing

6   optically back-scattered light off the surface;

7   arranging each optical element to pass an image of the illumination spot onto each

8   photosensor array associated with an optical element, the photosensor array

9   having a plurality of pixels; and

10   generating at least one image data signal from each photosensor array in response to

11   the image on the plurality of pixels of that photosensor array, each image data

12   signal comprising at least one image data point;

13   storing a first image data signal and a second image data signal, the first image data

14   signal comprises a first substantially random image data signal and the second

15   image data signal comprises a second substantially random image data signal;

16   and

17   measuring similarility of images through the first image data signal and the second

18   image data signal to obtain a displacement value, the displacement value

19   indicative of detected movement, the similarity of the first image data signal

20   to the second image data signal is measured at a multiple of a shift value, the

21   first image data signal being shifted by a predetermined shift value prior to the

22   measurement.

1   92.   (New) In an optical detection system housing a coherent light source for illuminating

2   a surface, and an optical sensing assembly comprising at least one photosensitive

3   array and at least one optical element, a method for detecting movement comprising:

4   generating an illumination spot on the surface by lighting the surface with a coherent

5   light beam from the coherent light source, the illumination spot providing

6   optically back-scattered light off the surface;

7   arranging each optical element to pass an image of the illumination spot onto each

8   photosensor array associated with an optical element, the photosensor array

9   having a plurality of pixels; and

10   generating at least one image data signal from each photosensor array in response to

11   the image on the plurality of pixels of that photosensor array, each image data

12   signal comprising at least one image data point;

13   storing a first image data signal and a second image data signal, the second image

14   data signal is substantially a shifted version of the first image data signal; and

15   measuring similarility of images through the first image data signal and the second

16   image data signal to obtain a displacement value, the displacement value

17   indicative of detected movement, the similarity of the first image data signal

18   to the second image data signal is measured at a multiple of a shift value, the

19   first image data signal being shifted by a predetermined shift value prior to the

20   measurement.

1   93.   (New) The method of claim 92, wherein the first image data signal is stored in a first

2   portion of a memory unit and the second image data signal is stored in a second

3   portion of the memory unit.

1   94.   (New) The method of claim 92, wherein the first image data signal is stored in a first

2   portion of a memory unit at a start of operation of the optical detection system and the

3   second image data signal is stored in a second portion of a memory unit for each set

4   of measurements of the similarity of images.

1   95.   (New) The method of claim 92, wherein the first image data signal comprises a first

2   substantially random image data signal and the second image data signal comprises a

3   second substantially random image data signal.

1   96.   (New) The method of claim 92, wherein the similarity of the first image data signal

2   to the second image data signal is measured at a multiple of a shift value, the second

3   image data signal being shifted by a predetermined shift value prior to the

4   measurement.

1   97.   (New) The method of claim 92, wherein the similarity of the first image data signal

2   to the second image data signal is measured at a predetermined multiple of a shift

3   value, the second image data signal being shifted by a predetermined shift value prior

4   to the measurement.

98. (New) The method of claim 92, wherein the similarity of at least two image data signals is based on each image data comprising a set and is measured at a multiple of a shift value, each set comprising a high resolution and a low resolution image data signal, and the image data signal in a first set being shifted by a predetermined shift value prior to the measurement.

99. (New) The method of claim 92, wherein measuring the similarity is performed through an application of a cross correlation function.

100. (New) The method of claim 92, wherein the displacement value comprises identifying a shift to apply to the first image data signal that results in a substantial similarity between the first image shifted by the displacement value and the second image.

101. (New) The method of claim 92, wherein the first image data signal is replaced by the second image data when a displacement value comprises a predetermined value.

102. (New) The method of claim 92, wherein the at least one optical element comprises a lens.

103. (New) The method of claim 92, wherein the at least one optical element comprises a lens and an aperture.

104. (New) The method of claim 92, wherein the coherent light beam from the coherent light source comprises a collimated beam.

105. (New) The method of claim 104, wherein the collimated beam produces the illumination spot on the surface.

1 106. (New) The method of claim 92, wherein the light source comprises a laser diode.

1 107. (New) The method of claim 92, wherein the back-scattered light from the surface,

2 passes through the at least one optical element to generate an image of the

3 illumination spot on the pixels of the at least one photosensor array.

1 108. (New) The method of claim 109, wherein the image is focused on the photosensor

2 array.

1 109. (New) The method of claim 92, wherein the back-scattered light from the surface,

2 passes through the at least one optical element to generate an image of the

3 illumination spot that is less than or equal to a size of the photosensor array.

1 110. (New) The method of claim 92, wherein the first image data signal comprises a first

2 speckle image data signal and the second image data signal comprises a second

3 speckle image data signal.

1 111. (New) The method of claim 110, wherein the speckle image associated with at least

2 one of the first speckle image data signal and the second speckle image data signal

3 comprises speckles of a dimension greater than or equal to a pixel dimension.

1 112. (New) The method of claim 99, wherein performing the cross correlation function

2 further comprises:

3 multiplying the first image data signal and the second image data signal and

4 summing results of each multiplication operation over each data point.

1 113. (New) The method of claim 112, wherein the cross correlation of the first image data

2 signal to the second image data signal is measured at a multiplicity of a shift value,

3   the first image data signal being shifted by a predetermined shift value before the

4   cross correlation is measured.

1 114. (New) The method of claim 113, wherein the displacement value comprises

2   identifying the shift to apply to the first image data signal that results in a substantial

3   cross correlation between the first image shifted by the displacement value and the

4   second image.

1 115. (New) In an optical detection system housing a coherent light source for illuminating

2   a surface, and an optical sensing assembly comprising at least one photosensitive

3   array and at least one optical element, a method for detecting movement comprising:

4   generating an illumination spot on the surface by lighting the surface with a coherent

5   light beam from the coherent light source, the illumination spot providing

6   optically back-scattered light off the surface;

7   arranging each optical element to pass an image of the illumination spot onto each

8   photosensor array associated with an optical element, the photosensor array

9   having a plurality of pixels; and

10   generating at least one image data signal from each photosensor array in response to

11   the image on the plurality of pixels of that photosensor array, each image data

12   signal comprising at least one image data point;

13   storing a first image data signal and a second image data signal, the first image data

14   signal comprises a first speckle image data signal and the second image data

15   signal comprises a second speckle image data signal; and

16   measuring similarility of images through the first image data signal and the second

17   image data signal to obtain a displacement value, the displacement value

18   indicative of detected movement, the similarity of the first image data signal

19   to the second image data signal measured at a multiple of a shift value, the

20   first image data signal being shifted by a predetermined shift value prior to the

21   measurement.

1   116.   (New) The method of claim, 115, wherein the first speckle image data signal is

2   stored in a first portion of a memory unit and the second speckle image data signal is

3   stored in a second portion of the memory unit.

1   117.   (New) The method of claim 115, wherein the first speckle image data signal is stored

2   in a first portion of a memory unit at a start of operation of the optical detection

3   system and the second speckle image data signal is stored in a second portion of a

4   memory unit for each set of measurements of the similarity of images.

1   118.   (New). The method of claim 115, wherein the first speckle image data signal

2   comprises a first substantially random image data signal and the second speckle

3   image data signal comprises a second substantially random image data signal.

1   119.   (New) The method of claim 115, wherein the similarity of the first speckle image

2   data signal to the second speckle image data signal is measured at a multiple of a shift

3   value, the first speckle image data signal being shifted by a predetermined shift value

4   prior to the measurement.

1   120.   (New) The method of claim 119, wherein the similarity of the first speckle image

2   data signal to the second speckle image data signal is measured at a predetermined

3   multiple of a shift value, the first speckle image data signal being shifted by a

4   predetermined shift value prior to the measurement.

1   121.   (New) The method of claim 115, wherein the similarity of at least two speckle image

2   data signals is measured at a multiple of a shift value, each set comprising a high

3   resolution and a low resolution image data signal, and the speckle image data signal

4   in the first set being shifted by a predetermined shift value prior to the measurement.

1   122.   (New) The method of claim 115, wherein measuring the similarity is performed

2   through an application of a cross correlation function.

1   123.   (New) The method of claim 115, wherein the displacement value comprises

2   identifying a shift to apply to the first speckle image data signal that results in a

3   substantial similarity between the first speckle image shifted by the displacement

4   value and the second speckle image.

1   124.   (New) The method of claim 115, wherein the first speckle image data signal is

2   replaced by the second speckle image data when a displacement value comprises a

3   predetermined value.

1   125.   (New) The method of claim 115, wherein the at least one optical element comprises a

2   lens.

1   126.   (New) The method of claim 115, wherein the at least one optical element comprises a

2   lens and an aperture.

1   127.   (New) The method of claim 115, wherein the coherent light beam from the coherent

2   light source comprises a collimated beam.

1 128. (New) The method of claim 127, wherein the collimated beam produces the

2   illumination spot on the surface.

1 129. (New) The method of claim 115, wherein the light source comprises a laser diode.

1 130. (New) The method of claim 115, wherein the back-scattered light from the surface,

2   passes through the at least one optical element to generate an image of the

3   illumination spot on the pixels of the at least one photosensor array.

1 131. (New) The method of claim 130, wherein the image is focused on the photosensor

2   array.

1 132. (New) The method of claim 115, wherein the back-scattered light from the surface,

2   passes through the at least one optical element to generate an image of the

3   illumination spot that is less than or equal to a size of the photosensor array.

1 133. (New) The method of claim 115, wherein a speckle image associated with at least

2   one of the first speckle image data signal and the second speckle image data signal

3   comprises speckles of a dimension greater than or equal to a pixel dimension.

1 134. (New) The method of claim 122, wherein performing the cross correlation function

2   further comprises:

3   multiplying the first image data signal and the second image data signal and

4   summing results of each multiplication operation over each data point.

1 135. (New) The method of claim 134, wherein the cross correlation of the first speckle

2   image data signal to the second speckle image data signal is measured at a

3   multiplicity of a shift value, the first speckle image data signal being shifted by a

4   predetermined shift value before the cross correlation is measured.

1   136.   (New) The method of claim 135, wherein the displacement value comprises

2   identifying the shift to apply to the first image data signal that results in a substantial

3   cross correlation between the first speckle image shifted by the displacement value

4   and the second speckle image.

1   137.   (New) The method of claim 136, wherein the second speckle image data signal is

2   substantially a shifted version of the first speckle image data signal.

1   138.   (New) In an optical detection system housing a coherent light source for illuminating

2   a surface, and an optical sensing assembly comprising at least one photosensitive

3   array and at least one optical element, a method for detecting movement comprising:

4   generating an illumination spot on the surface by lighting the surface with a coherent

5   light beam from the coherent light source, the illumination spot providing

6   optically back-scattered light off the surface;

7   arranging each optical element to pass an image of the illumination spot onto each

8   photosensor array associated with an optical element, the photosensor array

9   having a plurality of pixels; and

10   generating at least one image data signal from each photosensor array in response to

11   the image on the plurality of pixels of that photosensor array, each image data

12   signal comprising at least one image data point;

13   storing a first image data signal in a first set and storing a second image data signal in

14   a second set, each set comprising a high resolution and a low resolution image

15   data signal, each image data signal representing a random image; and

16   measuring similarility of image data signals in the first set and the second set to

17   obtain a displacement value, the displacement value indicative of detected

18   movement, the similarity of at least two image data signals is measured at a

19   multiple of a shift value, the image data signal in the first set being shifted by

20   a predetermined shift value prior to the measurement.

1   139.   (New) The method of claim 138, wherein the first image data signal is stored in a

2   first portion of a memory unit and the second image data signal is stored in a second

3   portion of the memory unit.

1   140.   (New) The method of claim 138, wherein the first image data signal is stored in a

2   first portion of a memory unit at a start of operation of the optical detection system

3   and the second image data signal is stored in a second portion of a memory unit for

4   each set of measurements of the similarity of images.

1   141.   (New) The method of claim 115, wherein the second image data signal is

2   substantially a shifted version of the first image data signal.

1   142.   (New) The method of claim 115, wherein the first image data signal comprises a first

2   speckle image data signal and the second image data signal comprises a second

3   speckle image data signal.

1   143.   (New) The method of claim 115, wherein the similarity of the first image data signal

2   to the second image data signal is measured at a multiple of a shift value, the first

3   image data signal being shifted by a predetermined shift value prior to the

4   measurement.

1 144. (New) The method of claim 115, wherein the similarity of the first image data signal

2   to the second image data signal is measured at a predetermined multiple of a shift

3   value, the second image data signal being shifted by a shift value prior to the

4   measurement.

1 145. (New) The method of claim 115 wherein the similarity of the first image data signal

2   to the second image data signal is measured at a multiple of a shift value, the second

3   image data signal being shifted by a predetermined shift value prior to the

4   measurement.

1 146. (New) The method of claim 138 wherein measuring the similarity is performed

2   through an application of a cross correlation function.

1 147. (New) The method of claim 138 wherein the displacement value comprises

2   identifying a shift to apply to the first image data signal that results in a substantial

3   similarity between the first image shifted by the displacement value and the second

4   image.

1 148. (New) The method of claim 138 wherein the first image data signal is replaced by the

2   second image data when a displacement value comprises a predetermined value.

1 149. (New) The method of claim 138 wherein the at least one optical element comprises a

2   lens.

1 150. (New) The method of claim 138, wherein the at least one optical element comprises a

2   lens and an aperture.

1   151.   (New) The method of claim 138, wherein the coherent light beam from the coherent

2   light source comprises a collimated beam.

1   152.   (New) The method of claim 151, wherein the collimated beam produces the

2   illumination spot on the surface.

1   153.   (New) The method of claim 138, wherein the light source comprises a laser diode.

1   154.   (New) The method of claim 138, wherein the back-scattered light from the surface,

2   passes through the at least one optical element to generate an image of the

3   illumination spot on the pixels of the at least one photosensor array.

1   155.   (New) The method of claim 154, wherein the image is focused on the photosensor

2   array.

1   156.   (New) The method of claim 138, wherein the back-scattered light from the surface,

2   passes through the at least one optical element to generate an image of the

3   illumination spot that is less than or equal to a size of the photosensor array.

1   157.   (New) The method of claim 142, wherein the speckle image associated with at least

2   one of the first speckle image data signal and the second speckle image data signal

3   comprises speckles of a dimension greater than or equal to a pixel dimension.

1   158.   (New) The method of claim 146, wherein performing the cross correlation function

2   further comprises:

3   multiplying the first image data signal and the second image data signal and

4   summing results of each multiplication operation over each data point.

1   159.   (New) The method of claim 158, wherein the cross correlation of the first image data

2   signal to the second image data signal is measured at a multiplicity of a shift value,

3   the first image data signal being shifted by a predetermined shift value before the

4   cross correlation is measured.

1   160.   (New) The method of claim 159, wherein the displacement value comprises

2   identifying the shift to apply to the first image data signal that results in a substantial

3   cross correlation between the first image shifted by the displacement value and the

4   second image.

1   161.   (New) In an optical detection system housing a coherent light source for illuminating

2   a surface, and an optical sensing assembly comprising at least one photosensitive

3   array and at least one optical element, a method for detecting movement comprising:

4   generating an illumination spot on the surface by lighting the surface with a coherent

5   light beam from the coherent light source, the illumination spot providing

6   optically back-scattered light off the surface;

7   arranging each optical element to pass an image of the illumination spot onto each

8   photosensor array associated with an optical element, the photosensor array

9   having a plurality of pixels; and

10   generating at least one image data signal from each photosensor array in response to

11   the image on the plurality of pixels of that photosensor array, each image data

12   signal comprising at least one image data point;

13   storing a first image data signal and a second image data signal; and

14   measuring similarility of images through the first image data signal and the second

15   image data signal to obtain a displacement value, the displacement value

16   indicative of detected movement, the similarity measured through application

17   of a cross correlation function further comprising,

18   multiplying the first image data signal and the second image data signal, and

19   summing results of each multiplication operation over each data point.

1   162.   (New) The method of claim 161, wherein the cross correlation of the first image data

2   signal to the second image data signal is measured at a multiplicity of a shift value,

3   the first image data signal being shifted by a predetermined shift value before the

4   cross correlation is measured.

1   163.   (New) The method of claim 162, wherein the displacement value comprises

2   identifying the shift to apply to the first image data signal that results in a substantial

3   cross correlation between the first image shifted by the displacement value and the

4   second image.

1   164.   (New) An optical detection system to identify displacement, the system comprising:

2   a coherent light source configured to generate an illumination spot on a surface, the

3   illumination spot providing optically back-scattered light off the surface;

4   at least one photosensitive array, each photosensor array having pixels;

5   at least one optical element, each optical element associated with a photosensitive

6   array, each optical element configured to pass an image of the illumination

7   spot onto its associated photosensor array to generate at least one image data

8   signal from in response to the image on the pixels of the associated

9   photosensor array, each image data signal comprising at least one image data

10   points;

11   a first storage area configured to store a first image data signal;

12   a second storage area configured to store a second image data signal; and

13   a comparison module configured to measure a similarity of images through the first

14   image data signal and the second image data signal to obtain a displacement

15   value, each image data signal comprising at least one image data points, the

16   comparison module applying a cross-correlation function to a multiple of a

17   shift value on a first randomly patterned image data signal being shifted by a

18   predetermined shift value from a second randomly patterned image data

19   signal.